STORMWATER CONTROL PLAN
For
SOUTH MAIN MANOR
124 South Main Street
Milpitas, CA

APN: 86-27-23

PROJECT SETTING

Site Features. The project is a mixed-use, transit-oriented, zero-lot-line development on a flat infill site. There are ten residential units, 1339 square feet of first-floor retail space, and 2,217 square feet of second-floor office space. Total lot area is 16,818 square feet. Ground-floor landscaping is limited to streetscape planter boxes.

The project is designed with podium parking. Access is from South Main Street. Residential units and offices are set on a second-story-level landscaped plaza.

Opportunities and Constraints. Because of the project's small size and 100% lot coverage, stormwater infiltration is not an option. The lack of ground-floor landscaping limits opportunities to integrate stormwater detention into the project. However, because all of the project's impervious area is at the second-floor plaza level or the roofs above, it is possible to route drainage from the rooftops and plaza to above-ground BMPs at lower levels.

MEASURES TO LIMIT IMPERVIOUSNESS

Site Design Features. This "smart growth" project contributes to City and regional goals to reduce sprawl and limit urban imperviousness. The high-density, mixed-use, transit-oriented nature of the project contributes to regional efforts to reduce automobile use, which is a primary cause of imperviousness and urban runoff pollutants. Indoor parking effectively eliminates the most significant source of imperviousness and urban runoff pollutants.

Measures to Limit Directly Connected Impervious Area. Although the project features 100% lot coverage, two bioretention areas, totaling 423 square feet, have been incorporated into the building. These bioretention areas treat runoff from the plaza and portions of the roofs above, and are also counted as "self-retaining" areas.

Pervious and Self-Retaining Areas. There are no pervious pavements on the site. Other than the two bioretention areas and other BMPs, there are no self-retaining landscaped areas.

SELECTION AND PRELIMINARY DESIGN OF TREATMENT BMPs

Overview – Roofs. Runoff from the roof areas will be treated in BMPs located at the second-floor plaza level. Roof gutters will capture the runoff as it flows off the roofs; downspouts and pipes will convey it to one of several BMPs. Where more than one BMP is used to treat runoff from a single roof, that roof's drainage will be divided by carefully setting a high point in the slope of the roof gutter. Drainage from the flat roof of Building 1 will be divided by locating small berms in the roofing material.

The division of the roof areas and the corresponding square footage is shown in Figure 1, "Impervious Areas."

Overview – Plaza. Drainage from the plaza will be divided by locating a grade break on either side of Building 3. Runoff from each of these areas will drain as sheet flow into bioretention areas located just below the grade of the plaza. The location of the grade break and the bioretention areas is shown in Figure 1.

Locations of BMPs

The location of the BMPs is shown in Figure 2. The BMPs are designated as follows:

- SPS1 and SPS2 are stormwater planters on the South Main Street frontage. They will receive runoff from areas BG1N1 and BG1N2, respectively, and will be constructed similar to the attached design detail (Figure 3).
- SP2 is a stormwater planter at the plaza level on the south side of Building 2. It will receive runoff from Building 2. It will be constructed similar to the design detail in Figure 3.
- SP3SW is a stormwater planter at the plaza level on the south side of Building 3. It will receive runoff from area BG3NW. Runoff will be piped around from the north side gutter to the south side of the building. SP3SW will be constructed similar to the design detail in Figure 3.
- SP3SE is similar in all respects to SP3SW. It will receive runoff from area BG3NE.
- SP3SC is a larger stormwater planter that will receive runoff from the south-facing roof of Building 3 (area BG3S). It will be constructed similar to the design detail in Figure 3.
- SP4S is a stormwater planter that will receive runoff from area BG4S. It will be constructed similar to the design detail in Figure 3.
- BIO-1 is a bioretention area that will be integrated into a landscaped area at the plaza level. It will receive runoff from part of the plaza (area Plaza1) and from part of the roof of Building 1 (area BG1S). The top of BIO-1 will be 12 inches below the surface of the plaza to allow for detention storage. BIO-1 will be constructed with 2 feet of sandy loam topsoil above 1 foot or more of pea gravel or drain rock. A perforated pipe underdrain will pipe treated runoff to the storm drain system.
- BIO2 is similar to BIO-1. It will receive runoff from the remainder of the plaza (area Plaza2) and from part of the roof of Building 4 (area BG4N).

Summary of Pervious and Impervious Areas and Treatment BMPs

The attached spreadsheet includes Tables 1 and 2. An electronic copy of the spreadsheet is submitted with this Stormwater Control Plan.

Table 1 lists self-retaining areas BIO-1 and BIO-2, totaling 520 square feet.

Table 2 accounts for the remaining area on the site, all of which is impervious. All areas are effectively "disconnected" from the drainage system by being routed to BMPs that detain and retain runoff from the stormwater quality design storm. This has been accomplished by applying the designated sizing factors for the stormwater planter and bioretention BMPs to determine the minimum surface area of each BMP. Each BMP has been designed to be larger than the minimum surface area.

SOURCE CONTROL MEASURES

The site has no potential outdoor work areas, and parking is indoors. Commercial activities are limited to office and retail compatible with the residences. Therefore there are few potential sources of runoff pollutants. Sources and associated source control BMPs are in Table 3.

SUMMARY OF PERMITTING AND CODE COMPLIANCE ISSUES

The two bioretention areas are located between the first and second floor levels and must be integrated into the building structure. The City of Milpitas Building Department will be consulted regarding any special requirements prior to final design.

BMP MAINTENANCE PLAN

The selected BMPs require minimum maintenance similar to that for any landscaped area. Specific requirements are:

- Stormwater planters and bioretention areas will be irrigated throughout the dry season. Irrigation will be of sufficient quantity and frequency to allow plants to thrive.
- Landscape maintenance will minimize the use of pesticides. See the Property Maintenance Fact Sheet, "Landscape Maintenance Techniques for Pesticide Reduction."
- Plants will be selected and replaced, and soils will be amended, as necessary to maintain soil structure and permeability throughout the stormwater planter and bioretention areas. General landscape maintenance, including pruning and cleanup, will be sufficient to insure that the BMPs are attractive and do not create a nuisance.

A BMP Operation and Maintenance Agreement between the City and the applicant will include a BMP maintenance plan and will be negotiated at the time of building permit application.

City of Milpitas

Stormwater C3 Compliance Detention, Retention, and BMP Sizing Worksheet

See Stormwater C.3. Compliance Handbook Chapter 5 for Instructions

Information from Planning and Zoning Application

Project Name South Main Manor

Address/Location 124 South Main Street **Assessor's Parcel Number** 86-27-33

Applicant Name Raymond and Sylvia Leung

Applicant Address 47588 Wabana Common, Fremont 94539

Phone **Fax** **Email**

Use a separate sheet for each catchment area **Total Area of this Catchment:** 16818

Table 1. Pervious Areas

Area ID	Surface	Size (square feet) Self-retaining	Size (square feet) Non-self retaining	Runoff factor "C"	Size * C
BIO-1	LS/Bioret.	350			
BIO-2	Bioret.	170			
Totals		520	0		0

Runoff factors for non-self-retaining pervious

Surface	"C"
Turf	0.2
Landscape	0.2
Crushed aggregate	0.15
Pervious Concrete	0.1
Pervious Asphalt	0.1

Table 2. Impervious Areas

Area ID	Surface	Area Size (SF)	BMP ID	Area Served by BMP	Sizing Factor	Minimum Surface Area	Surface Area as designed
BG1N1	Roof	950	SPS1	950	0.045	43	45
BG1N2	Roof	950	SPS2	950	0.045	43	45
BG1S	Roof	656					
Plaza1	Paved	5500	Bio-1	6156	0.045	277	300
BG2	Roof	1708	SP2	1708	0.045	77	140
BG3NE	Roof	600	SP3SE	600	0.045	27	30
BG3NW	Roof	600	SP3SW	600	0.045	27	30
BG3S	Roof	1208	SP3SC	1208	0.045	54	63
BG4S	Roof	850	SP4S	850	0.045	38	39
BG4N	Roof	850					
Plaza2	Pavement	2,400	Bio-2	3250	0.045	146	171
				0			
				0			
				0			
				0			
				0			
Total		16272		16272			

Sizing Factors

BMP	Factor
Landscape Swale	0.050
Vegetative Filter	0.065
Stormwater Planter	0.045
Bioretention	0.045
Sand Filter	0.045

Summary

Total self-retaining Area	520
Total Area Served by Integrated/Distributed BMPs	16,272
Total Disconnected Area	16,792
Total Area in Catchment	16,818
Remaining Area to be Served by Structural BMPs	**26**

Table 3. Potential Sources of Runoff Pollutants and Source Control BMPs.

Potential Source	**BMP**
Illegal dumping.	There are no storm drain inlets on site.
Interior floor drains.	Interior floor drains to be plumbed to the sanitary system.
Parking lots	Floor drains to be plumbed to the sanitary system via a device approved by the Water Pollution Control Plant
Pesticide/fertilizer application	Instructions on pesticide and fertilizer use to be incorporated into agreement for O&M of treatment BMPs.
Fountain on plaza.	Provide sanitary clean-out for discharge of fountain water for cleaning.
Food service facilities.	No food service facilities planned on site. If added at a future date, required BMPs should be incorporated into permit approvals at that time.
Refuse areas.	Refuse is to be stored inside and removed to South Main Street only for pickup.
Litter and food waste on plaza	Regular pickup and cleaning by building maintenance. Plaza runoff is treated in bioretention areas.
Litter on South Main Street frontage.	Regular pickup and sweeping by building maintenance.

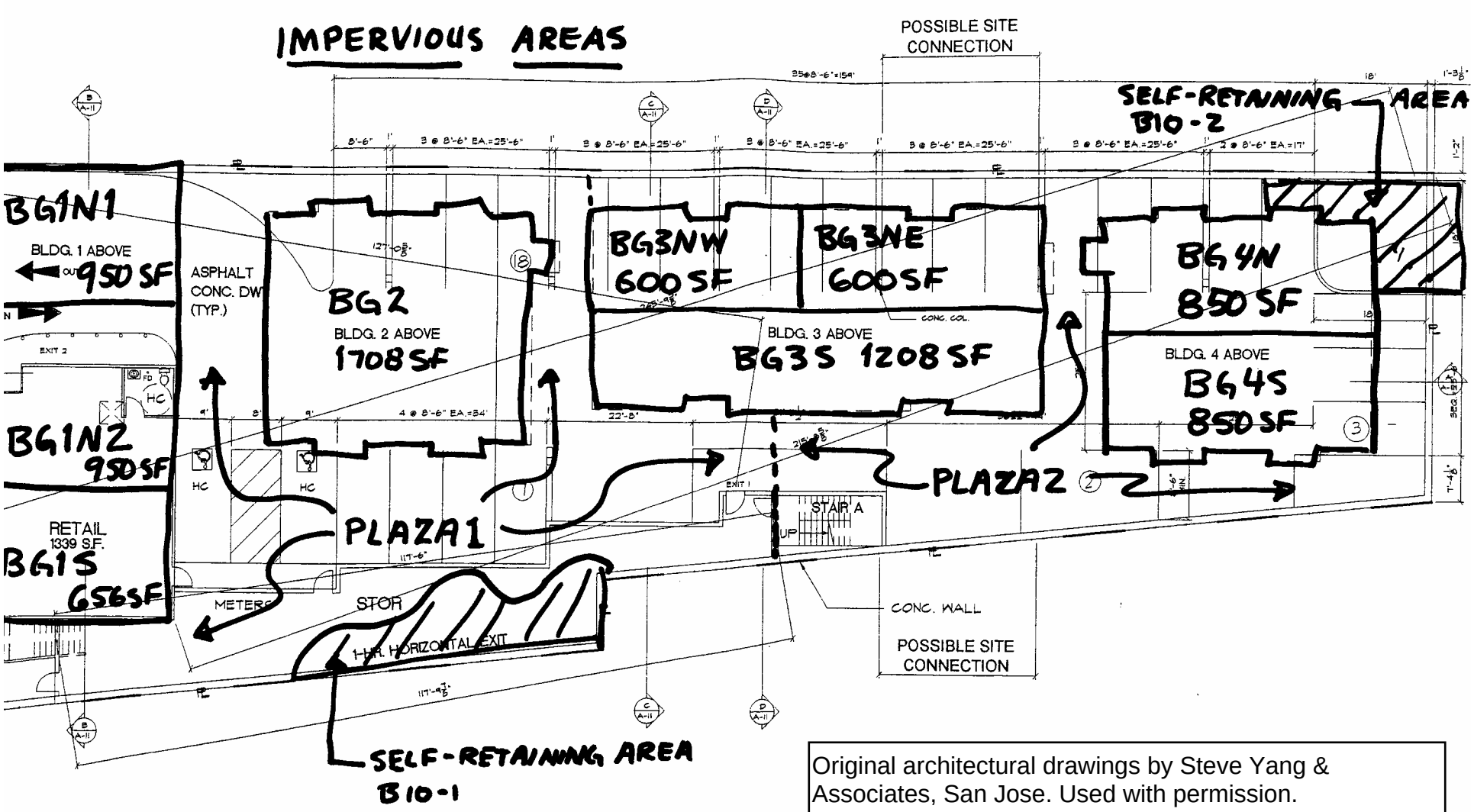

Figure 1. Designation of Impervious Areas

Original architectural drawings by Steve Yang & Associates, San Jose. Used with permission.

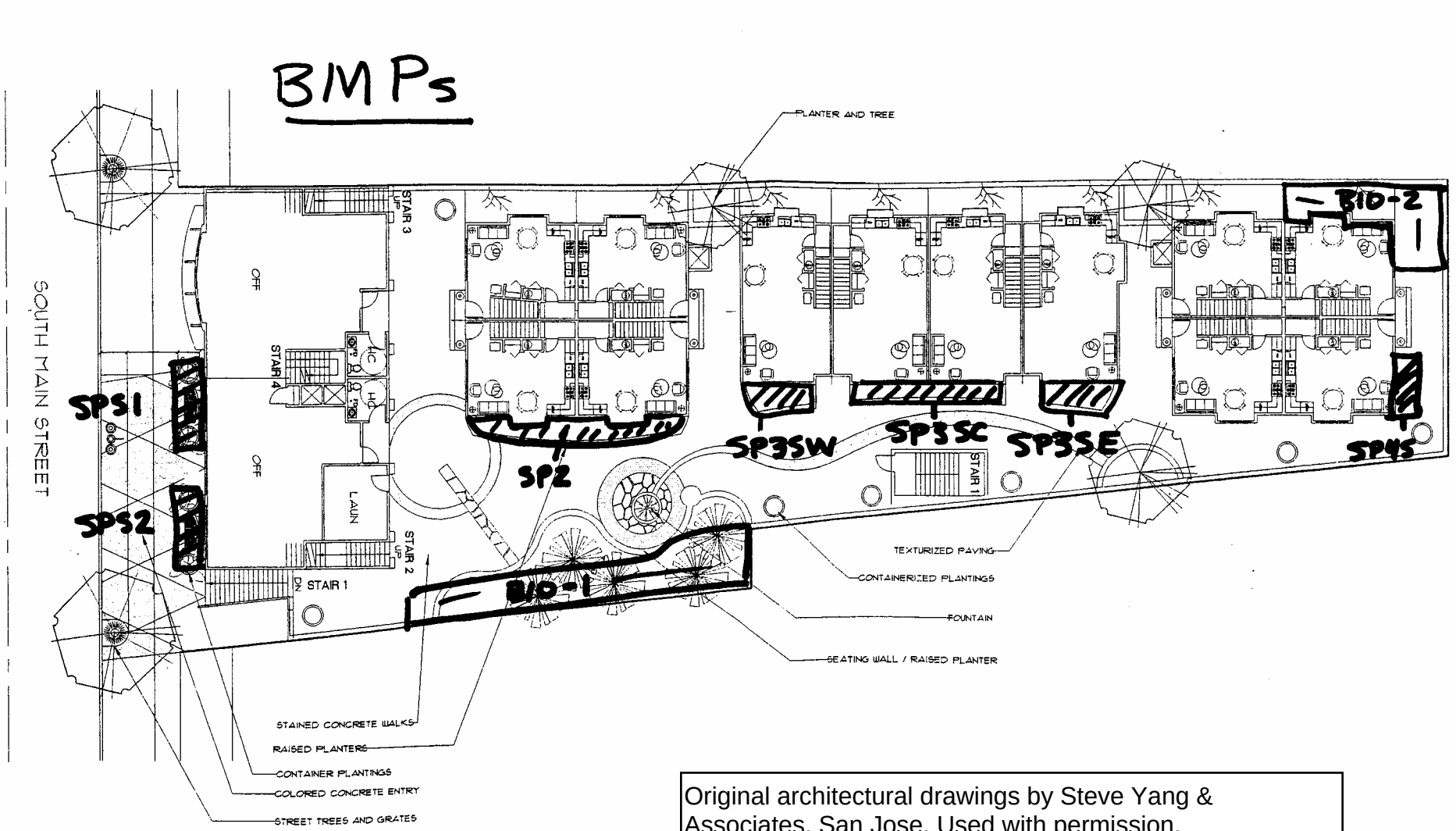

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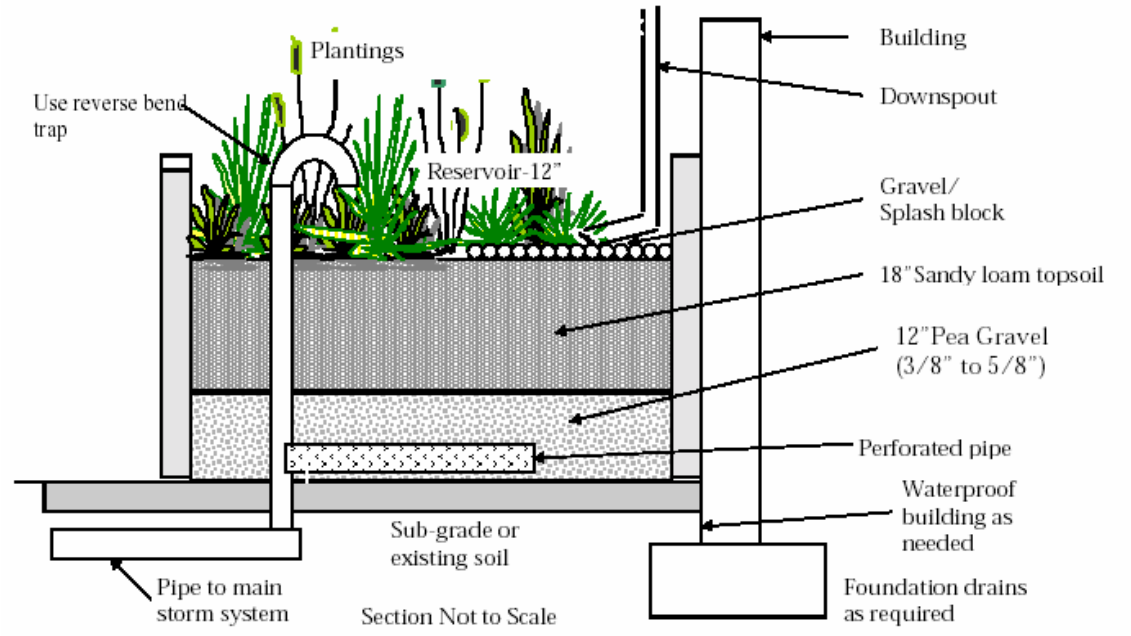
Figure 2. Locations of BMPs

Figure 3.

► **STORMWATER PLANTER**



Can be used in any soil type (A,B,C,D). Can be used adjacent to building and within setback area.
Minimum width: 18".
Minimum length: none.
May be constructed of wood (but not treated wood that may leach toxic chemicals), concrete, stone, or other durable material.
Irrigation required to maintain plant viability.

Drawing courtesy City of Portland, OR.